

## Chapter 3

### Geometry and Measurement

3.1

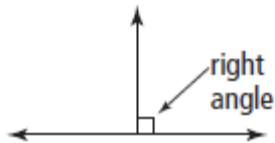
#### parallel

- describes lines in the same plane that never cross, or intersect
- they are marked using "arrows"



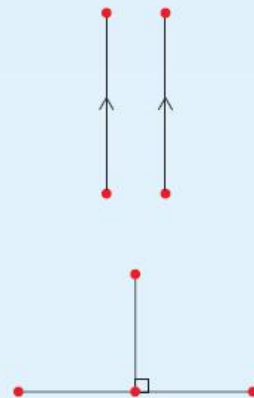
#### perpendicular

- describes lines that intersect at right angles ( $90^\circ$ )
- they are marked using a small square



#### Key Ideas

- Parallel line segments are line segments in the same plane that do not intersect.
- The perpendicular distance between parallel line segments must be the same at each end of the line segments.
- Some ways to create parallel line segments include
  - using a ruler and a right triangle
  - using paper folding
- Perpendicular line segments are line segments that intersect at  $90^\circ$ .
- Some ways to create perpendicular line segments include
  - using a ruler and a protractor
  - using paper folding



### Literacy Link

#### Bisect

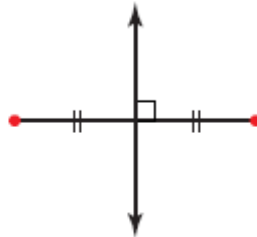
*Bi* means "two."

*Sect* means "cut."

So, to bisect means to cut in two.

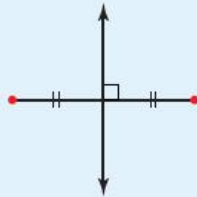
#### perpendicular bisector

- a line that divides a line segment in half and is at right angles to it
- equal line segments are marked with "hash" marks

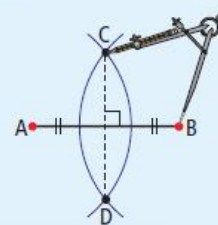


### Key Ideas

- A perpendicular bisector is a line that divides a line segment in half and is at right angles ( $90^\circ$ ) to the line segment.

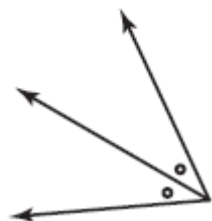


- Some ways to create a perpendicular bisector include using a compass, using a ruler and a right triangle, and using paper folding.

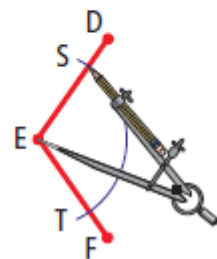


**angle bisector**

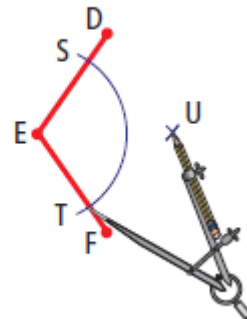
- the line that divides an angle into two equal parts
- equal angles are marked with the same symbol

**Solution***Method 1: Use a Compass*

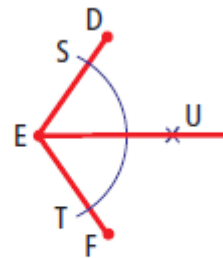
Draw and label the angle DEF. Place your compass point on E. Draw an arc as shown. Label the points of intersection S and T.



Place your compass point on S and draw an arc. Then place the compass point on T and draw an arc. Label the point of intersection U.



Use a ruler to draw a line segment from point E to point U. The angle bisector of  $\angle DEF$  is EU. Extend EU to make an arrow.

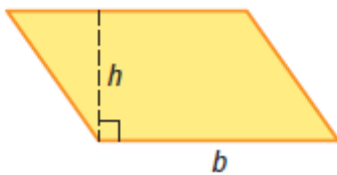


**base**

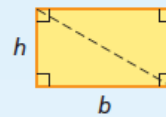
- a side of a two-dimensional closed figure
- common symbol is  $b$

**height**

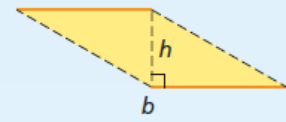
- the perpendicular distance from the base to the opposite side
- common symbol is  $h$

**Key Ideas**

- The formula for the area of a rectangle can be used to determine the formula for the area of a parallelogram.
- The formula for the area of a parallelogram is  $A = b \times h$ , where  $b$  is the base and  $h$  is the height.
- The height of a parallelogram is always perpendicular to its base.



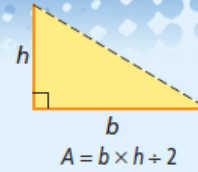
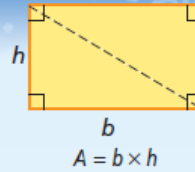
$$A = b \times h$$



$$A = b \times h$$

### Key Ideas

- The formula for the area of a rectangle or parallelogram can be used to determine the formula for the area of a triangle.



- The formula for the area of a triangle is  $A = b \times h \div 2$  or  $A = \frac{b \times h}{2}$ , where  $b$  is the base of the triangle and  $h$  is the height of the triangle.
- The height of a triangle is always perpendicular to its base.